La Posta Linkage Portfolio

San Diego County, California

I-8 bridge at La Posta Creek. Photo by Michael White.

CONSERVATION BIOLOGY INSTITUTE

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San Diego County, California

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The Conservation Biology Institute (CBI) provides scientific expertise to support conservation and recovery of biological diversity in its natural state through applied research, education, planning, and community service.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

EXECUTIVE SUMMARY

The San Diego County—Northern Baja California region supports a remarkable diversity of natural resources in the midst of a binational human population of over 4 million people, spanning approximately 60 miles from the Pacific Ocean to the Sonoran Desert. The rapid growth of the human population along the international border is compromising our ability to plan for and conserve natural landscapes that maintain the full complement of the region's biodiversity and the integrity of natural systems. In San Diego County, large conservation investments have been made by federal, state, and local agencies, along the coast, in the mountains, and across the desert. As part of California's Natural Community Conservation Planning (NCCP) program, a network of linked preserves is being proposed for the lands west of the mountains. Ultimately, the County of San Diego will undertake a NCCP program for the rest of the county, which will propose additional conservation of core resource areas and linkages to existing conserved lands.

The purpose of this project was to take the first step in developing a conservation strategy for a north-south habitat linkage in one portion of the border region of San Diego County—the area surrounding the Campo Valley, herein referred to as the La Posta Linkage planning area. Specifically, we propose a strategy for conserving habitat linkages between existing conserved habitats along the border and existing conserved habitats in the Laguna Mountains. This initial strategy was developed in coordination with planning efforts in Baja California and planning efforts in other parts of San Diego County and the South Coast Ecoregion.

We hope this report will serve as the impetus needed to coordinate conservation efforts in this intermountain area of San Diego County and the rest of the binational border region.

1.0 INTRODUCTION

1.1 PURPOSE AND NEED

The rapid pace of urbanization in San Diego County and northern Baja California is destroying and fragmenting natural habitat areas and the diverse array of species that depend on them. The biological resources of the international border region are especially vulnerable to "slipping through the cracks" of regional planning because of the binational scope of the resources and the paucity of binational conservation planning. This project addresses fragmentation at a landscape scale by focusing on the needs of a variety of plant and animal species, including large mammals such as mountain lions and deer, which require functional movement corridors between habitat areas.

Several regional habitat linkages have been identified through San Diego County. The Conservation Biology Institute (CBI) is working with the South Coast Wildlands Project (SCWP), The Nature Conservancy (TNC), and others to pursue conservation of these linkages by developing "linkage portfolios" (SCWP et al. in prep.). Habitat linkages maintain the connectivity between important core resource areas or public lands. Regional north-south habitat linkages in southern San Diego County along the U.S.-Mexico border (Figure 1) were prioritized for this research on the basis of size of the wildlands connected by the linkages, irreplaceability of the linkages, and their importance to conserving mountain lions, bobcats, and deer, which are considered to be umbrella species for large-scale ecological processes.

This report focuses on the Campo Valley/La Posta Road area, herein referred to as the La Posta Linkage planning area, which connects north-central Baja California and the chaparral, scrub, and riparian habitats south of I-8 with the McCain Valley and Laguna Mountains north of I-8 (Figure 2). The linkages in this area could be irretrievably compromised by development projects on both sides of the border in the next few years. The biological integrity of the existing conserved open space in San Diego County would be jeopardized if these linkages were lost.

The products of this effort are:

- A publicly available Geographic Information System (GIS) database of protected areas and land management status in the U.S. portion of the planning area;
- Maps of unprotected areas and impediments within the planning area;
- Biological characterization and a set of conservation goals for the planning area, including descriptions of the major wildlands to be linked, priority targets for conservation, and impediments to animal movement; and
- Identification of potential conservation strategies and partners to pursue them.

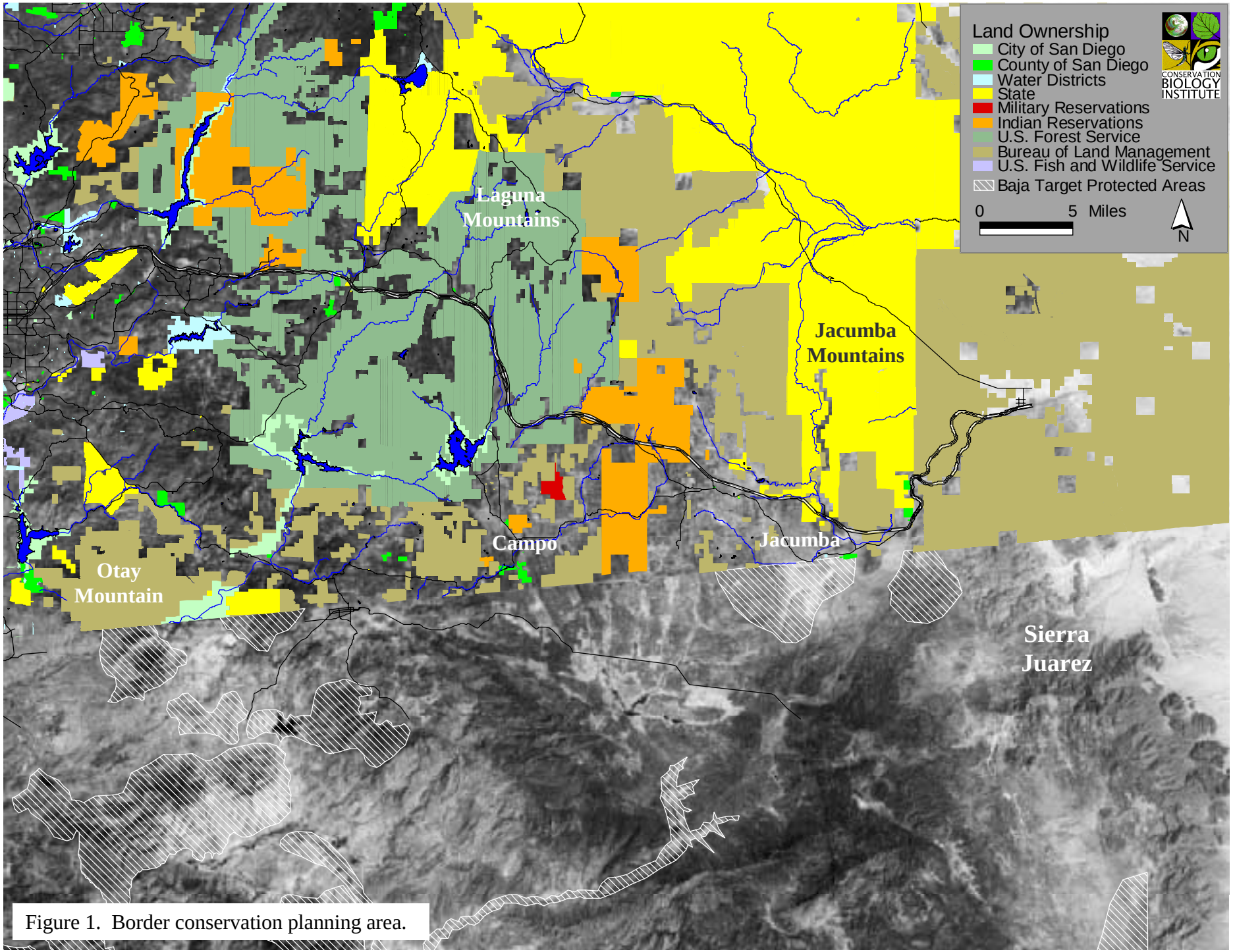

Figure 1. Border conservation planning area.

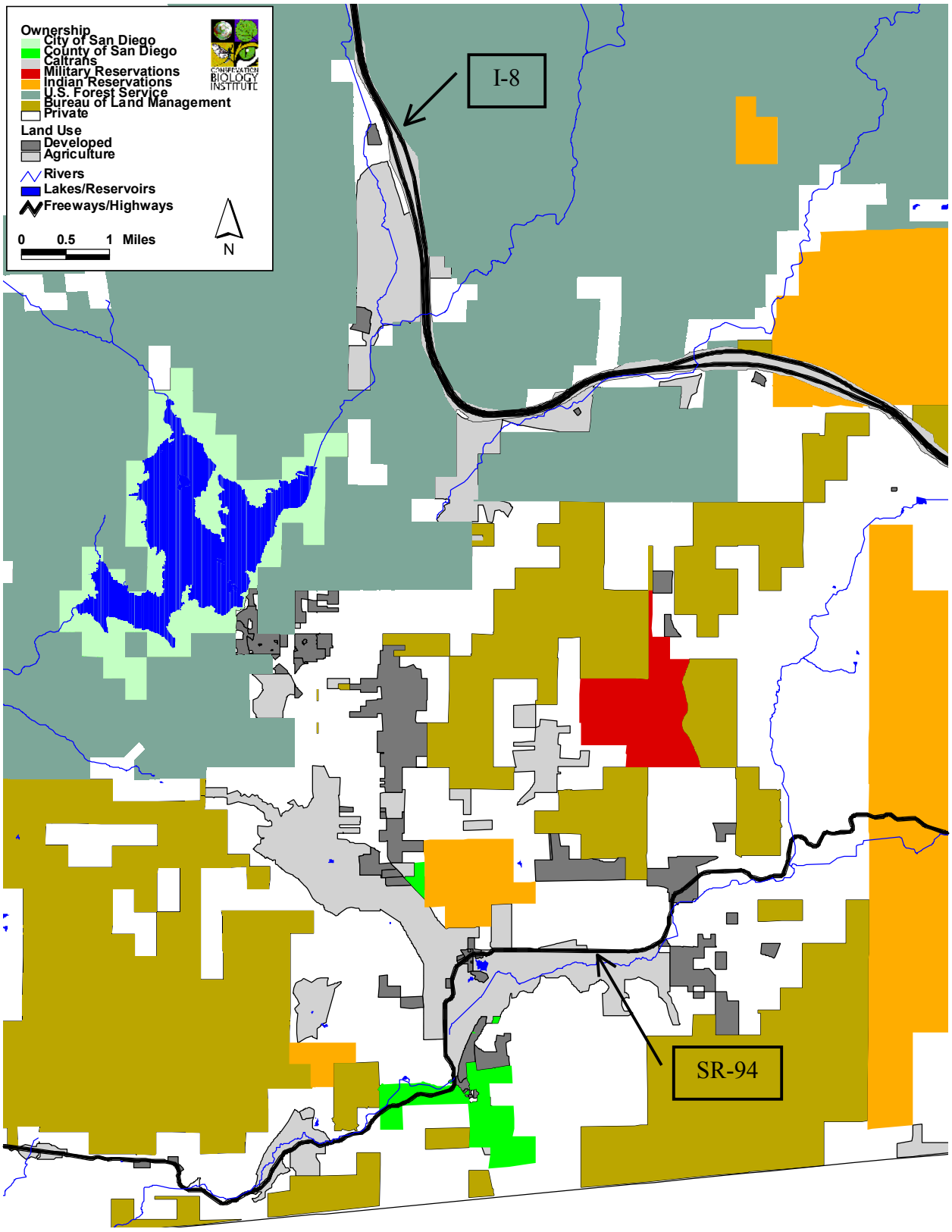

Figure 2. La Posta Linkage planning area.

A more detailed report covering the other areas of the border is being developed for release as part of the Missing Linkages project (SCWP et al. in prep.). Further conservation planning for west-east habitat connectivity between coastal, mountain, and desert communities will be the focus of future collaboration between CBI, Pronatura, and TNC. We hope these projects will leverage funding from additional granting agencies to implement a binational conservation strategy for the border region.

1.2 BACKGROUND

1.2.1 Biogeographic Significance

The U.S.-Mexico border region deserves special consideration for conservation planning. Conservation scientists have identified the California Floristic Province as one of 25 global hotspots of biodiversity (Dobson et al. 1997, Mittermeier et al. 1999). The U.S.-Mexico border region lies within the Peninsular Ranges, which comprise the southern portion of the California Floristic Province (Mittermeier et al. 1999). Threats from a growing population in the region have the potential to produce a regional extinction crisis of a scale unparalleled in the United States.

The La Posta Linkage planning area comprises an ecological transition area between low elevation coastal habitats to the west, the higher elevations of the Peninsular Range/Sierra de Juarez to the north and southeast, and the Sonoran Desert to the east. The area also forms the intersection of high elevation habitats in the Laguna Mountains with lower elevation habitats of the Campo Valley. The planning area supports large area-dependent species that use both the Campo Valley and Laguna Mountains habitats, such as the mountain lion, golden eagle, spotted owl, and badger.

1.2.2 Growth and Development Patterns

Growth and development patterns on both sides of the international border are quickly compromising our ability to conserve a representation of this portion of the South Coast Ecoregion in southern San Diego County and northern Baja California. Growth eastward from the coast is beginning to spill over the foothills into the planning area. I-8 largely severs connectivity between habitats north and south of it, except for a few bridges where animals can cross under the freeway. Increasing development along SR-94 in the Campo Valley is beginning to close off opportunities for designating a north-south habitat linkage between the international border and the Laguna Mountains. Sand mining in stream channels and riparian habitats, ranchette-type development of the backcountry, and agricultural activities on both sides of the border are affecting habitats and water supplies, which could severely impact plant and animal habitats. In addition to growth sanctioned by the County of San Diego, there are two Native American reservations in this area—the Campo and La Posta bands of Mission Indians. Development within sovereign Native American reservations does not necessarily adhere to County land use plans or policies.

Increased development brings with it a human need for increased open space, particularly in Mexico where there is very little public land or designated open space. The patterns of ownership, land uses, topography, and biological resources suggest the need for binational conservation areas that represent these patterns. Conservation of habitats along the border, as opposed to development, would not only protect ecological integrity but would also facilitate Homeland Security efforts.

1.2.3 Planning Processes

Historically, planning processes on both sides of the border have stopped at the border and have not recognized the shared resources and complementary conservation opportunities of the border region itself. Following is a summary of the various planning processes that encompass the region on both sides of the border. With few exceptions, these processes do not address binational issues.

United States

Binational Wildlife Corridor Project. The Back Country Land Trust (BCLT), a nonprofit organization based in Alpine, California, is facilitating a cooperative effort between government and private entities in Mexico and the U.S. to ensure that adequate open space is conserved to function as viable, trans-border wildlife corridors. Its goal is to identify priority areas that may serve this function and seek funding for their conservation.

California Natural Community Conservation Planning (NCCP) Programs. The County of San Diego is participating in the state's NCCP program to develop habitat conservation plans that identify priority areas for conservation of biological resources while allowing development to proceed in other areas. The County Department of Planning and Land Use hopes to initiate data assimilation for the East County NCCP (Multiple Habitat Conservation and Open Space Program) within the next year.

County of San Diego General Plan 2020 Update (GP-2020). GP-2020 will establish future growth and development patterns for the unincorporated areas of the county. Approximately 20% of the population in 2020 is proposed to be located outside the San Diego County Water Authority service boundary, including the La Posta Linkage planning area. However, population growth and associated infrastructure in the Mountain Empire district, including the towns of Boulevard, Jacumba, Lake Morena/Campo, Potrero, and Tecate, will more than double in this area, according to the County's preliminary distribution map population projections (April 2002).

Missing Linkages Project. In November 2000, SCWP and its partners organized the Missing Linkages conference at the San Diego Zoo. Over 200 land managers and conservation ecologists assembled to identify critical linkages among the major wildland areas of California. Since that conference, CBI and TNC have been working with SCWP and others to complete the documentation needed for the Missing Linkages database as well as to identify other habitat conservation priorities. The ultimate goal is to conserve

core natural open spaces and linkages that support a network of wildlands across planning boundaries. These large, connected areas will not only support top predators but also will conserve ecological processes that are vital to the integrity of the South Coast Ecoregion. Three regional north-south habitat linkages were identified for the trans-border area:

- Coastal Baja—Otay Mountain—Laguna Mountains
- Central Baja—Campo—Laguna Mountains
- Sierra Juarez—Jacumba Mountains

South Coast Resource Management Plan. The Bureau of Land Management (BLM) administers 9,500 acres of land in the La Posta Linkage planning area and recognizes its natural resource value. This document summarizes BLM's management approach.

Southern California Forest Plan Revisions. The U.S. Forest Service (USFS) is currently evaluating preliminary management alternatives for the four National Forests in Southern California, including the Cleveland National Forest. The Draft Plans and Draft Environmental Impact Statement are anticipated for distribution in Fall 2003.

Tijuana River Watershed Binational Vision Project. The State of California has funded a binational team of researchers to develop baseline information for the trans-border Tijuana River watershed. Key stakeholders are working together with this information to devise strategies and options for creating and achieving a binational vision.

TNC South Coast Ecoregion Planning. TNC is re-evaluating its portfolio sites in the South Coast Ecoregion, which includes San Diego County and northwestern Baja California. TNC's planning has confirmed the need for a binational conservation strategy along the U.S.-Mexico border.

Mexico

Areas Verdes. Scientists from the Universidad Autonoma de Baja California (UABC) are assisting the Município de Tijuana with the identification of important natural resource areas as part of the Ordenamiento Ecológio for the município. The ordenamiento will be used to guide land development within the Município de Tijuana.

Fundación La Puerta. Fundación La Puerta is working with Pronatura and BLM to establish conservation easements on lands surrounding Rancho La Puerta near Tecate and to link the habitats in Mexico with adjacent protected lands in the U.S.

Las Californias Initiative. Pronatura is identifying priority conservation areas in the Tijuana River watershed, between Tijuana and Tecate, as part of this initiative. One goal is development of a conservation "blueprint" for a portion of the border region, with associated legal and policy mechanisms for land conservation.

2.0 METHODS

The objective of this project was to identify key north-south habitat linkages in the La Posta Linkage planning area from the international border to the Laguna Mountains, identify biological resources and species that might benefit from the linkages, and assess threats to connectivity in the planning area. CBI updated GIS databases, conducted two workshops of biological experts to identify species that would benefit from regional habitat connectivity and could be used to assess the functionality of linkages in the area, conducted field assessments to verify land use and to identify and describe threats to connectivity, and identified critical areas for conservation. These steps are described below.

2.1 DATABASE UPDATES AND GAP ANALYSIS

CBI downloaded relevant GIS databases from the San Diego Association of Governments (SANDAG) website, including vegetation, public ownership, and land use for San Diego County. We updated the vegetation database for the planning area by adding development polygons from the year-2000 land use database. We also updated the California Gap Analysis Program (GAP) for this area by adding public ownerships, including lands administered by BLM and the U.S. Navy, and assigning the appropriate gap categories used for other public lands in the area. Using these data, we conducted a gap analysis of the habitat linkages to identify areas of natural vegetation that are currently protected and those in need of protection.

The Gap Analysis Program places land into one of four management categories (Scott et al. 1993):

> GAP 1—land with an active management plan in operation that is maintained in its natural state and within which natural disturbance events are either allowed to proceed without interference or are mimicked through management.
>
> GAP 2—land that is generally managed for its natural values, but which may receive use that degrades the quality of natural communities.
>
> GAP 3—most non-designated public lands, including USFS, BLM, and state park lands. Legal mandates prevent permanent conversion to anthropogenic habitat types (with some exceptions, such as tree plantations) and confer protection to populations of federally- and state-listed endangered, threatened, and/or candidate species.
>
> GAP 4—private or public land without an existing easement or irrevocable management agreement that maintains native species and natural communities and which is managed primarily or exclusively for intensive human activity (i.e., not protected). Urban, residential, and agricultural lands, public buildings and grounds, and transportation corridors are included in this class.

2.2 BIOLOGICAL WORKSHOPS

On June 28, 2002, SCWP and its partners, including CBI, convened a Habitat Connectivity Planning Workshop for the border region at the San Diego Zoo. Over 70 individuals attended the workshop, representing 40 government agencies, non-governmental organizations, academic institutions, Native American Tribes, and professional consultants, and including our colleagues from Mexico (Appendix A). The objectives of the workshop were to solicit biological information and to identify focal species for the Missing Linkages planning effort. The workshop was divided into two sessions: (1) presentations by invited speakers in the morning, and (2) in the afternoon, taxonomic working groups to identify focal species—invertebrates, herpetofauna/fish, birds, mammals, and plants—and associated relevant information.

CBI, TNC, and SCWP also conducted a workshop with Mexican biologists at UABC on September 21, 2002 (Appendix A). Biologists from UABC, Pronatura, San Diego Natural History Museum, San Diego County, and others familiar with resources in northern Baja California attended the meeting. The objective of this meeting was to identify core resource areas in northern Baja California that should be priorities for conservation. Members of the workshop had little field data for the region of Baja California south of the La Posta Linkage planning area, but agreed that the area is an important target that requires additional attention. Additional conservation planning studies are needed in this area to identify a southern connection in Baja California for the La Posta Linkage.

2.3 FIELD ASSESSMENT

CBI conducted several field reconnaissance visits during the period July 2002 through June 2003 to evaluate habitat quality and land use conditions in the planning area, identify impediments to animal movement and potential threats to habitat connectivity, and assess potential restoration needs. We verified land use maps using year-2000 color infrared aerial photography and the SANDAG GIS land use data layer. We noted the dimensions and characteristics of impediments, road crossings, and underpasses, took photographs, and evaluated the potential for the area to be used by selected target species. Our reconnaissance was restricted to public lands and those private lands where we had access permission from the landowners.

2.4 LINKAGE IDENTIFICATION AND EVALUATION

CBI identified potential habitat linkages within the planning area based on existing land use and ownership patterns and the availability of contiguous natural habitats. Our objective was to identify private lands with significant biological value that should be conserved to link resources protected on public lands. This coarse-filter approach eliminated areas dominated by residential, commercial, or industrial development from the linkage planning area.

CBI evaluated the adequacy of the linkages for selected species and communities. Based on information obtained during the biological workshops, we qualitatively assessed vegetation communities, topography, and land use and roads to determine the functionality of the linkages for our target species. We did not conduct field surveys to determine if the linkages are being used.

3.0 CONSERVATION GOALS AND OPPORTUNITIES

3.1 BIOGEOGRAPHIC SIGNIFICANCE

3.1.1 Existing Conservation Investments

National Forest, BLM, and California State Park lands represent huge blocks of public lands that stretch from the coastal foothills in Alpine, across the montane landscapes of the Laguna Mountains, through the chaparral and riparian oak woodlands of the Campo Valley, across the Tecate Divide to the desert washes and volcanic peaks of the Sonoran Desert and Jacumba Mountains (Figure 1). The Hauser and Pine Creek Wilderness Areas encompass over 21,000 acres within the Descanso District of the Cleveland National Forest, the southernmost National Forest in California, which encompasses almost 500,000 acres. Anza-Borrego Desert State Park is the largest state park in California and the largest desert state park in the contiguous U.S., spanning 600,000 acres, two-thirds of which are designated Wilderness Areas.

BLM administers thousands of acres along the border, including lands around Tecate Peak, White Mountain, Potrero Peak, Hauser Mountain, and rugged canyons through the Campo Valley area.

Within the La Posta Linkage planning area, the large block of Cleveland National Forest is primarily north of I-8, but also extends south of the freeway. The La Posta Microwave Tower property, administered by the Department of Defense as a U.S. Navy Seals training facility, is located in the center of the planning area. While this land is not managed for biological resources, the land is largely in its natural state, which is compatible with the use of the land for military training purposes. The La Posta Microwave Tower property is surrounded by a patchwork of BLM lands. Other large blocks of BLM land are located south of SR-94 along the border (Figure 2).

South of the U.S.-Mexico border in this area, there are no protected lands or public lands. However, conservation priorities identified at the Ensenada workshop include the perennial springs and vernal pools around Neji and the watershed lands of Cañada del Testarazo (Figure 2), as well as habitats in the central portion of the valley that would maintain a landscape linkage north across the border. Future conservation planning in this area of Mexico should identify important target areas for linking with protected lands in the U.S.

3.1.2 Connectivity Issues

Connectivity between high value wildlands is critical to maintaining the values of the existing conservation investments described above. Road and highway corridors and associated developments are major impediments to wildlife movement in the planning area. I-8 and SR-94 are the major transportation corridors in the area and can be significant barriers and sources of mortality for large animals. There are only four habitat

undercrossings of I-8 within the Cleveland National Forest, a distance of about 19 miles. These four bridges allow animals to move through habitat under the freeway rather than crossing the freeway at-grade or using paved roads under the freeway. The I-8 bridges over La Posta Creek and Kitchen Creek span riparian forest, chaparral, and grassland habitats on private property that is currently used for grazing. The habitat in these two areas currently provides linkages between conserved lands north and south of I-8 within the La Posta Linkage planning area.

Smaller surface streets are probably less of an impediment to the movement of large animals but can still be significant barriers to smaller and less mobile organisms. Road corridors can also have broader edge effects on adjacent habitat by serving as routes for the invasion of exotic species, being sources of pollution, and modifying water runoff patterns. Roads and associated development fragment existing habitat, which decreases habitat quality for many organisms and reduces the permeability of the habitat to species movement. Development along SR-94 is increasing to the point that there are limited opportunities for linking habitats on both sides of SR-94 through the planning area.

3.1.3 Description of the La Posta Linkage Planning Area

The planning area is topographically diverse, with well-defined north-south draining valleys supporting springs, wet and dry meadow floodplains, and oak woodlands, interspersed with exposed, rocky peaks ranging from 3,000-4,000 ft in elevation. The most prominent of these peaks are Cameron Peak (elevation 3,951 ft) and the La Posta Microwave Tower peak (elevation 3,800 ft). Hauser Mountain (elevation 3,700 ft), Los Pinos Mountain (4,800 ft), and Lake Morena border the planning area on the west.

The climate is typical of inland valleys in southern San Diego County. The area is characterized by hot, generally dry summers and cool, wet winters, with substantial year-to-year variations in temperature and precipitation. Monthly average maximum temperatures at the Campo weather station range from a low of 61.8°F in January to 93.7°F in July. Monthly average minimum temperatures vary from a low of 32.7°F in December to 52.8°F in August. Periods of freezing temperatures and frost are probably common during winter months. Annual average rainfall at the Campo station is 14.85 inches. Monthly average rainfall totals at the Campo station range from a high of 3.19 inches in January to 0.07 inch in June. The majority of rainfall (>85%) occurs during the period from November to April and is associated with Pacific storms generated in the Gulf of Alaska. However, this area of the county also experiences periodic summer monsoons originating from the eastern tropical Pacific and Gulf of Mexico.

The planning area lies within the geologic feature known as the Peninsular Ranges Batholith (PRB). The PRB includes a series of north-northwest trending mountain ranges (plutons) formed during subduction of the Farallon oceanic plate beneath the western margin of North America. The PRB is divided on the basis of age into the older western zone (>100 million years old) and the younger eastern zone (<100 million years old). The north-south boundary between these two zones divides the La Posta Linkage planning area (Walawender 2000). Gabbro peaks (e.g., Los Pinos Mountain) are

scattered in the western zone. Thus, the planning area supports two distinct geologic formations with different mineral compositions, which likely contributes to the vegetation community diversity of the area.

The planning area lies within the Cottonwood, Cameron, and Campo sub-basins (hydrologic areas) of the Tijuana River watershed. Three major streams in this area have their headwaters in the Laguna Mountains—Cottonwood Creek, Kitchen Creek, and La Posta Creek. A number of smaller tributaries of Campo Creek flow north from Mexico into the Campo Valley. In addition, there are several springs, both mapped and unmapped, in the planning area.

From west to east, the major drainages, and corresponding valleys, are:

- Pine Creek (Pine Valley north of I-8 and Oak Valley and Corte Madera Valley south of I-8)
- Morena Creek, which flows into Lake Morena
- Cottonwood Creek (Cottonwood Valley, straddling I-8)
- Kitchen Creek (Cottonwood Valley, straddling I-8)
- La Posta Creek (Cameron Valley and La Posta Valley, straddling I-8)
- Miller Creek (Clover Flat/Miller Valley south of I-8)

The planning area also forms the headwaters of Hauser Creek, a tributary of Cottonwood Creek, which flows through the Hauser Wilderness Area to Barrett Reservoir. Campo Creek/Campo Valley is the major east-west topographic feature bisecting the southern part of the planning area along SR-94, and La Gloria Canyon and Smith Canyon are the primary north-south topographic features south of SR-94.

This is an ecological transition area between coastal habitats to the west, the higher elevations of the Peninsular Range/Sierra de Juarez to the north and southeast, and the Sonoran Desert to the east. The planning area forms the intersection of high elevation habitats (e.g., mixed oak and coniferous forests, montane meadows, montane ceanothus and manzanita chaparrals) in the Laguna Mountains with mid-elevation habitats of the Campo Valley, including northern mixed, chamise, redshank, scrub oak, and upper Sonoran mixed chaparrals covering rugged canyons, inland valley grasslands, and low- to intermediate-gradient drainages lined with live oaks and Engelmann oaks (Figure 3). The planning area supports over 30 vegetation communities. With the exception of grazing in the grasslands and meadows, and clearing along the border, the native vegetation communities in most parts of the planning area exhibit little human disturbance.

This area is rich in biodiversity, even thought it does not appear to support as many endangered species as areas along the coast. The working groups at the San Diego Zoo workshop identified 17 focal species for planning linkages in this area (Table 1). In addition to this list, we considered other large area-dependent species that use the Laguna

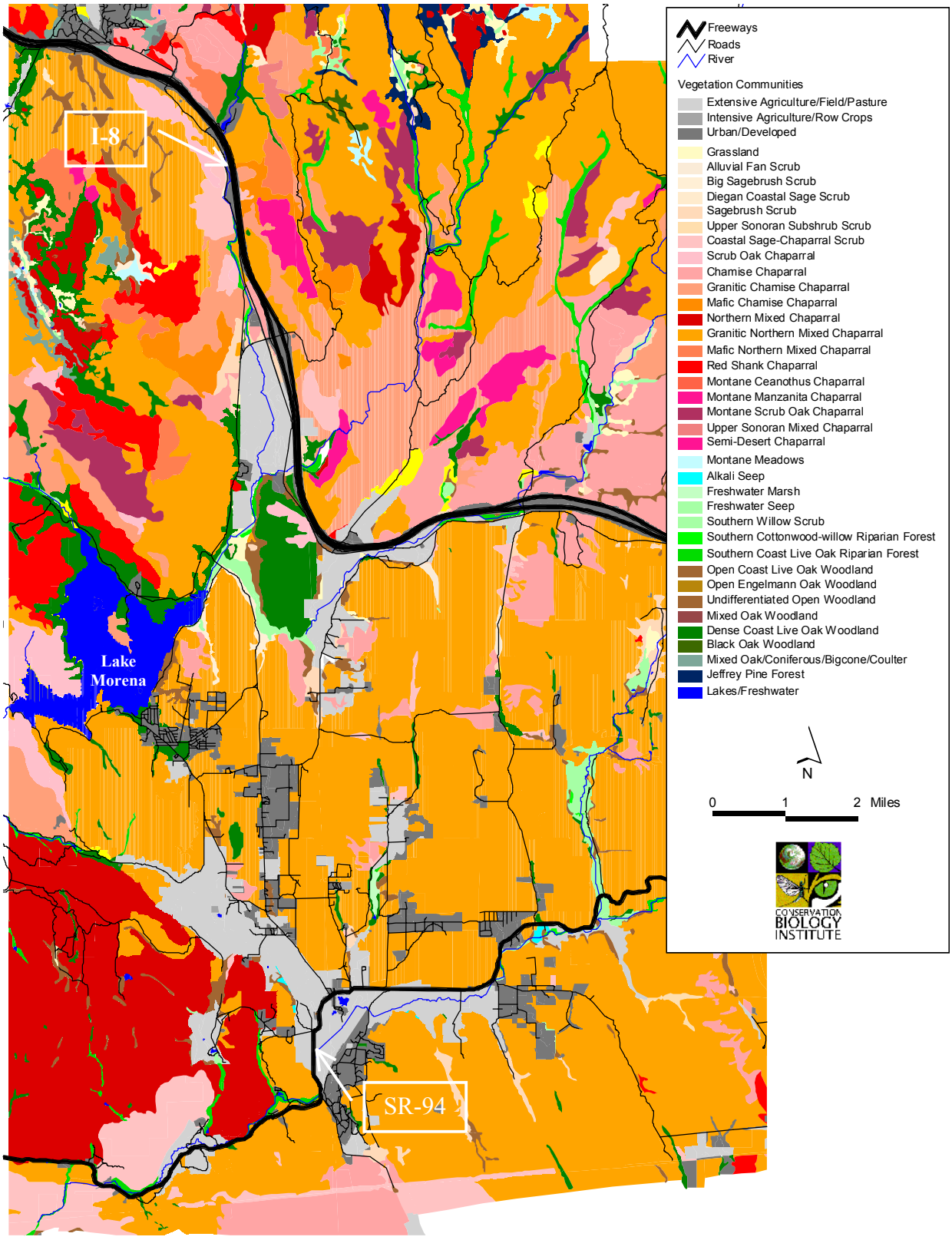

Figure 3. Vegetation communities in the La Posta Linkage planning area.

Mountains and the lower elevations as well, such as the mountain lion and spotted owl. The federally endangered arroyo toad is known to occur in at least some of the streams.

Table 1. Focal species identified at the Zoo Workshop for the La Posta Linkage

Species	**Habitat Preference**
Velvet ant (*Dasymutillia* spp.)	Sparse upland vegetation in friable soils
Sonoran blue butterfly (*Philoides sonorensis*)	Crassulaceae species are larval hosts; chaparral in rocky canyons
Quino checkerspot butterfly (*Euphydryas editha quino*)	*Plantago/Castileja* are larval hosts; open upland habitats with larval host plants and nectar sources for adults
Threespine stickleback (*Gasterosteus aculeatus*)	Aquatic habitats with low-gradient, cool perennial flow
Western pond turtle (*Clemmys marmorata*)	Aquatic habitats with low-gradient perennial flow
Coast horned lizard (*Phrynosoma coronatum*)	Open chamise chaparral and coastal sage scrub
Granite night lizard (*Xantusia henshawi*)	Exfoliating rock outcrops
Baja leopard lizard (*Gambelia copei*)	Open chamise chaparral
Lesser nighthawk (*Chordeiles acutipennis*)	Open, undisturbed shrublands and dry washes
Tricolored blackbird (*Agelaius tricolor*)	Large marshes for nesting and large grasslands/pastures for foraging
Golden eagle (*Aquila chrysaetos*)	Cliffs for nesting and grasslands and open chaparral for foraging
Sage sparrow (*Amphispiza belli*)	Sage scrub and young chaparral stands on gentle slopes
Mule deer (*Odocoileus hemionus*)	Hardwood-conifer, oak woodland, riparian forest, and sage scrub
Black-tailed jackrabbit (*Lepus californicus*)	Grasslands and open sage scrub
Badger (*Taxidea taxus*)	Open, level uplands
Red shank (*Adenostoma sparsifolia*)	Granitic soils in areas where summer moisture (rain, fog, soil moisture) is available
California juniper (*Juniperus californica*)	Desert-chaparral transition zone with granitic soils
Tecate cypress (*Cupressus forbesii*)	Gabbro and metavolcanic soils
White alder (*Alnus rhombifolia*)	Higher elevation streams with permanent flow
Spring beauty (*Linanthes bellus*)	Coarse sandy soils in transborder region

3.2 CONSERVATION GOALS

Based on our analyses, we identified the following conservation goals for the planning area (U.S. only):

1. Link Laguna Mountains with Central Baja (regional linkages):
    a. BLM land on the border, including La Gloria and Smith canyons and Schockey Truck Trail, north through Clover Flats, Miller Creek, Brian's Creek, and Denlinger valley.
    b. BLM land on the border north along Campo Creek to Hauser Mountain and Star Ranch valley.
2. Create at least two areas of unfragmented core habitat in the planning area:
    a. BLM lands around the La Posta Microwave Tower property (contiguous with the National Forest lands to the north).
    b. Hauser Mountain across SR-94 to BLM lands on the border (contiguous with the Hauser Wilderness Area and National Forest lands to the north).
3. Conserve oak woodlands along riparian corridors in the planning area.
4. Conserve grasslands and meadows, which are under-represented in conserved open space in the planning area and which are vulnerable to development.
5. Provide foraging for large area-dependent species in the planning area.
6. Conserve a representative sample of vegetation communities unique to the planning area, including the intermountain transition between coastal and desert communities.

This report addresses only the first goal. Future conservation planning in this area will be used to refine these goals.

3.3 GAP ANALYSIS AND LAND USE ZONING

Of the natural vegetation within the La Posta Linkage planning area, 58% is public land and 42% is privately owned (excluding Native American reservation land). Public lands with habitat include those administered by the USFS (mostly north of I-8), BLM, U.S. Navy, City of San Diego (watershed lands around Lake Morena), and County of San Diego (Lake Morena County Park). The Campo Band of Mission Indians and the La Posta Band of Mission Indians have reservations in the planning area. These areas were excluded from the linkage analysis because of access and land use planning constraints.

With the exception of the Hauser Mountain and Pine Creek Wilderness Areas, which are Management Status 1 (GAP 1), all of the public habitat land in the planning area is Management Status 3 (GAP 3) (Figure 4). With the exception of recreational areas at

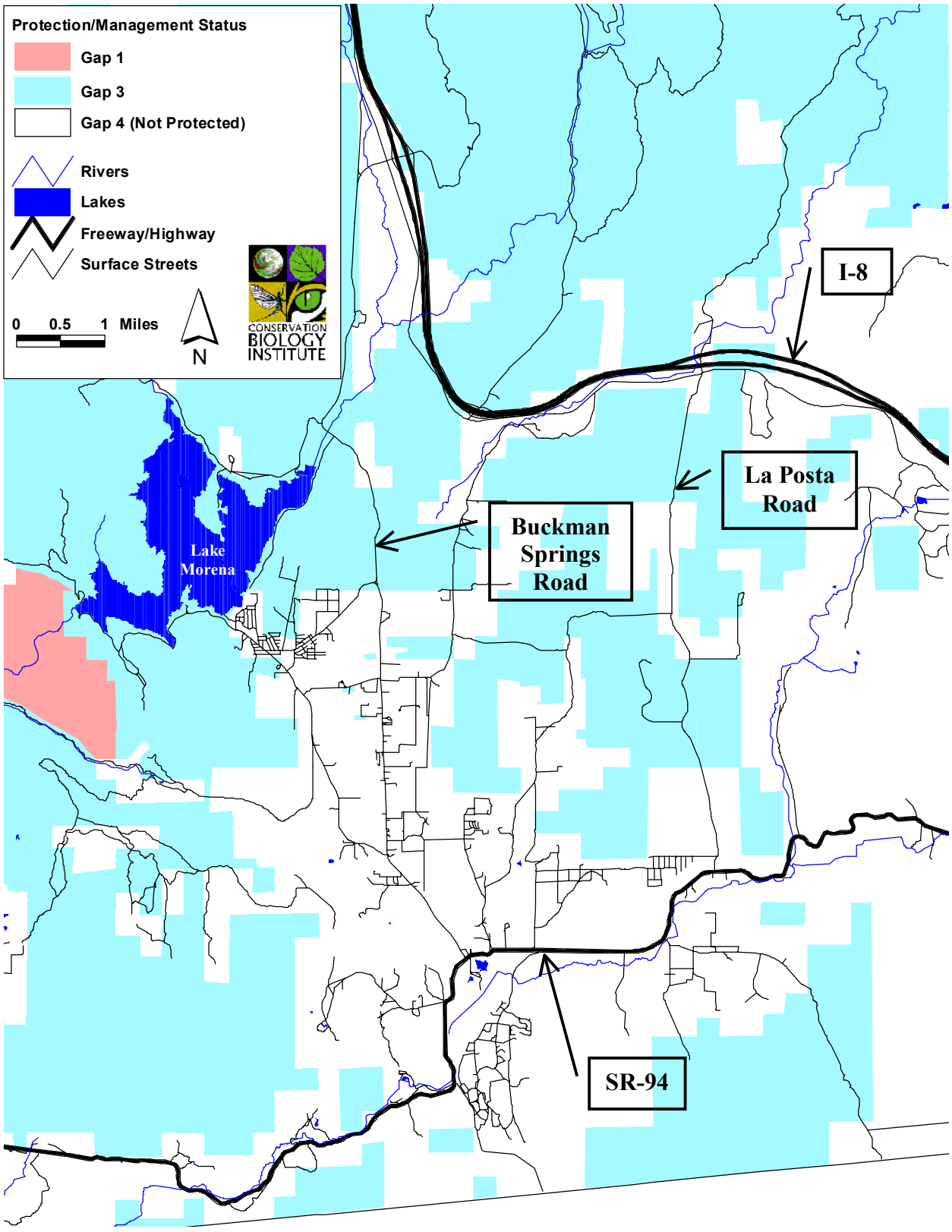

Figure 4. Protection/management status of land in the La Posta Linkage planning area.

Lake Morena County Park and the Microwave Tower, these lands exhibit very little disturbance to the natural vegetation. Dirt roads traverse some of the BLM and National Forest lands, allowing access for field evaluation and probably facilitating large mammal movement. All private lands and Native American reservation lands are Management Status 4 (GAP 4). (Refer to Section 2.1 for GAP category definitions.)

The La Posta Linkage planning area is within the Lake Morena/Campo community planning area (Appendix B). According to the existing County of San Diego General Plan, the majority of the privately owned land in natural vegetation within the linkage planning area is zoned for Multiple Rural Use (1 dwelling unit (du)/4, 8, 20 acres). Two areas are zoned for General Agriculture (1 du/10, 40 acres). According to the Working Copy (December 2002) map being developed as part of the General Plan update (GP-2020), most of the privately owned land is proposed for Rural Lands (RL)-40 (1 du/40 acres), a portion is zoned for RL-20 (1 du/20 acres), and a portion is zoned for Semi-Rural Residential-10 (1 du/10 acres). Both maps also designate higher density areas of Residential, Semi-Rural Residential, Village Residential, and Commercial around Morena Village, Cameron Corners, and Campo (Appendix B).

3.4 CONSTRAINTS AND THREATS

The inland valleys comprising the Campo (U.S.) and El Hongo (Mexico) valleys support grazing lands and ranchette-type development, particularly in the more developable floodplain areas (e.g., Campo Creek). There are signs that larger residential developments are quickly moving east from the coast in San Diego County, based on recent development permits and real estate transactions. There is a new residential development (Campo Hills) south of SR-94 that is currently being constructed. The existing General Plan zoning for the Lake Morena/Campo area could be a constraint to conservation efforts.

I-8 and SR-94 in the U.S. and Highway-2 in Mexico are significant barriers to wildlife movement, and increasing development along these roads is exacerbating the problem. Also, sand mining on both sides of the border is destroying riparian habitats (e.g., Campo and Miller creeks in the U.S. and Las Calabazas drainage in Baja). Development and agriculture on both sides of the border are affecting habitats and water supplies. The Campo band of Mission Indians has a casino and is planning additional housing for casino employees. The planning area is also threatened by an altered fire regime resulting from frequent escaped campfires of illegal immigrants.

The fence along the international border is corrugated steel in the western part of the planning area. In steep, rocky areas, there is a barbed wire fence or no fence. The U.S. Border Patrol maintains a dirt road and firebreak along the border, and there is evidence of recreational use (e.g., shotgun shells) in La Gloria and Smith canyons and along the Schockey Truck Trail. Dirt roads through these canyons likely facilitate movement by large mammals (e.g., mountain lions, bobcats, coyotes, deer), whereas the ranchette development along SR-94, with its roads, people, and dogs, probably discourages use by these mammals, especially deer. A new border patrol station is proposed along Old

Highway-80. The additional night lighting and traffic is expected to pose additional adverse impacts to animal movement. Riprap along the banks of sections of Cottonwood Creek, Kitchen Creek, and La Posta Creek likely hinders use by large mammals.

3.5 OPPORTUNITIES FOR CONSERVATION

There are many public lands within the U.S. portion of the planning area, including BLM parcels and the La Posta Microwave Tower property administered by the U.S. Navy. BLM is considering withdrawing administration of its parcels to the Navy for training use by the Navy SEALs. The Navy is also considering purchase of adjoining parcels as a buffer to its operations, which appear to be compatible with habitat conservation objectives. BLM also administers land along the border, which probably supports north-south movement of wildlife between Mexico and the Campo area. The California Department of Parks and Recreation is evaluating land conservation opportunities south of SR-94 and Cameron Corners, including areas with historic values. Proposed land uses on these public lands appear to be compatible with conservation goals for the area, and the configuration of public lands could facilitate formation of protected core resource areas if private inholdings were also protected.

The County of San Diego is currently preparing General Plan 2020, which will affect land uses and population densities in this area (County of San Diego, in prep.). It is important to ensure that land uses and population densities do not compromise conservation objectives. The General Plan 2020 Working Copy map shows densities of 1 unit per 40 acres for much of this area, with 1 unit per 20 acres and 1 unit per 10 acres along Buckman Springs Road, SR-94, and Old Highway-80. The overall down-zoning may encourage landowners to sell their properties for conservation and/or set aside lands in conservation easements.

There are three I-8 bridges in the planning area: at Pine Creek, Kitchen Creek, and La Posta Creek. These three bridges, plus the bridge for the Sweetwater River west of the planning area, are the only habitat underpasses for wildlife movement under I-8 through the Cleveland National Forest, a distance of approximately 19 miles. The land under these bridges supports both wetland and upland habitat types. The current land use in these areas is grazing, which is compatible with use as a habitat linkage. However, any development in these three areas would threaten the viability of the linkages and the conserved habitats connected by the linkages.

Wet meadows and riparian habitats along Cottonwood, Kitchen, La Posta, Miller, and Campo creeks, and other unnamed drainages are considered wetlands by the California Department of Fish and Game and waters of the U.S. by the U.S. Army Corps of Engineers. Development or filling of these areas would require permits from these agencies. The County of San Diego, Department of Planning and Land Use, also requires minimizing development in wetland and riparian habitats. According to local landowners, springs in the planning area provide a perennial water supply. Many wet meadows and floodplains of the creeks in the planning area would benefit from restoration and removal of riprap.

4.0 STRATEGIES FOR CONSERVATION

4.1 PROPOSED LANDSCAPE LINKAGES

CBI identified two critical landscape linkage complexes in this area that, if conserved, would link protected habitats on public lands to the north and south (Figure 5):

- Linkage Complex A in the eastern part of the planning area
- Linkage Complex B in the western part of the planning area

For both linkage complexes, conservation of private lands is critical, either in the form of acquisition for conservation or designation of conservation easements with managed grazing. Identification of west-east landscape linkages across the planning area, and including north-central Baja California, will be the focus of a separate project, which will evaluate unique biogeographical nodes and associated linkages from the coast to the desert along both sides of the border.

Linkage Complex A links BLM lands along the border with BLM lands around the Microwave Tower property with National Forest lands south and north of I-8. This complex includes private inholdings in Forest Service lands and other private lands centered around the Microwave Tower property. The bottlenecks in this complex are private lands on either side of SR-94 and private lands under and along I-8. Currently, the only crossing of SR-94 in Linkage Complex A is at-grade.

Linkage Complex B links BLM lands along the border with Hauser Mountain and National Forest lands. This complex includes private lands at the head of Hauser Canyon and in the valley along the eastern slope of Hauser Mountain, which would also contribute to a core resource area centered around Hauser Mountain and the Hauser Wilderness. The bottlenecks in this complex are also private lands along both sides of SR-94, where some form of conservation is critical. While SR-94 bridges Campo Creek in the westernmost part of Linkage Complex B, many species likely also cross SR-94 at-grade through the flatter portions of this linkage complex.

4.2 COMMUNITY AND FOCAL SPECIES ASSESSMENTS

Greater conservation and connectivity in the planning area will benefit focal plant and animal species both within the planning area as well as in habitats connected to the planning area. Conservation of both linkage complexes will protect additional acreage of oak woodlands (live oak and Engelmann oak) and grasslands, which are generally under-represented on protected public lands in the planning area. Conservation will also result in protecting a more representative sample of vegetation communities unique to this planning area, including the intermountain transition between coastal and desert communities.

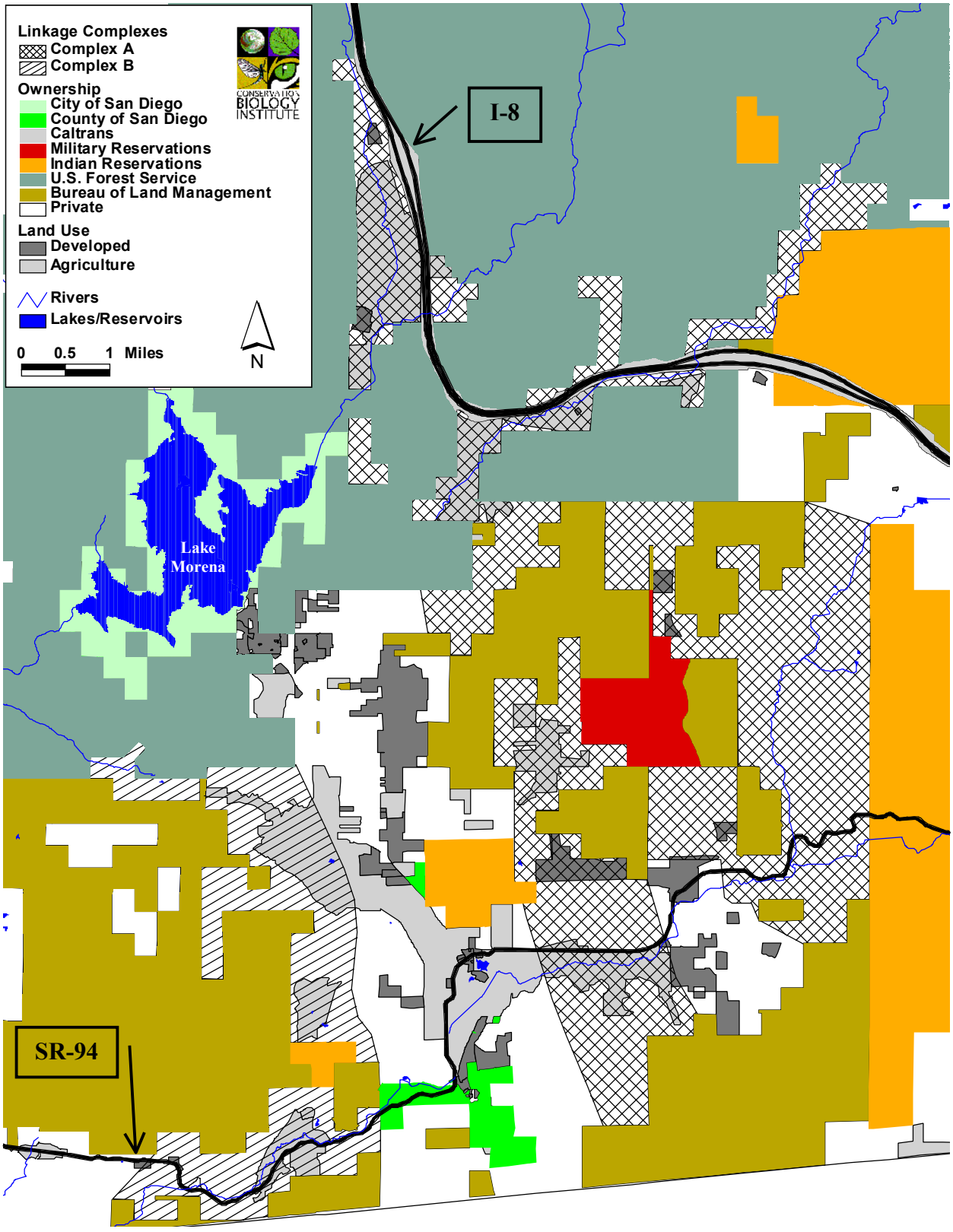

Figure 5. Linkage complexes in the La Posta Linkage planning area.

Greater conservation in the planning area will protect the integrity of red shank, which is more abundant to the west and east of the planning area, and California juniper, which is concentrated to the north and south of the planning area.

Conservation of habitat linkages between National Forest lands to the north and BLM lands along the border, including a variety of upland and wetland community types across elevational gradients, will also allow for movement of wildlife and genetic exchange across the region. Large mammals such as deer, mountain lions, bobcats, and coyotes are expected to use these areas as part of their home ranges as well as for movement between protected areas. The conservation of two core nodes of protection, one around the La Posta Microwave Tower property and one around Hauser Mountain, would ensure protected foraging habitat for large area-dependent species such as mountain lions, deer, bobcats, badgers, spotted owls, golden eagles, and other raptors. Contiguous stretches of protected open space are critical to large mammals and badgers.

Quino checkerspot butterflies, federally listed as Endangered, have been recorded to the west (Southwest San Diego Recovery Unit) and east (Southeast San Diego Recovery Unit) of the planning area (USFWS 2000). Similarly, Sonoran blue butterflies have populations on both sides of the planning area (Pine Valley and Jacumba). Thus, conservation in the La Posta Linkage planning area is critical to the integrity of Quino checkerspot and Sonoran blue butterfly populations, habitat recolonization, and genetic exchange between populations. The Sonoran blue butterfly particularly favors canyons extending from lower to higher elevations.

Conservation of streams in the area will increase protection of habitat for the western pond turtle and arroyo toad, which is federally listed as Endangered. Historically, the arroyo toad has been documented in Cottonwood Creek, and there is the potential for this species to occur in other creeks in the area (Lovich pers. comm.). Pond turtles are known to occur at Lake Morena, and there is the potential for their occurrence at Cottonwood Creek, Campo Marsh, and Campo Lake (Mahrdt pers. comm.). There is the potential for sticklebacks to occur in perennial stream reaches or reaches with permanent pools at higher elevations north of I-8. Conservation of scrub habitats will also increase protection for coast horned lizards and granite night lizards, which are known from the planning area, and possibly Baja leopard lizards (Mahrdt pers. comm.).

The tricolored blackbird requires large grassland pastures for foraging and marshes for nesting. Grazing can be compatible with use of pastures as blackbird foraging habitat. There are three known colonies in the border region: Twin Lakes-Potrero, Campo, and Jacumba (San Diego Bird Atlas, Unitt pers. comm.). These colonies may be an essential link between Baja and the rest of the species' range; loss of these colonies could isolate the small Baja population of tricolored blackbirds (Unitt pers. comm.). Thus, conservation of this species' habitat in the planning area is critical. Over-pumping of groundwater is a likely threat to the population.

Sage sparrows require large, unbroken areas of shrubland on gradual to moderate slopes (Lovio pers. comm.). Because of fragmentation of more coastal habitats by development,

conservation of large core areas in the La Posta Linkage planning area would benefit this species.

4.3 IMPLEMENTATION

Conservation of the La Posta Linkage portfolio can be achieved through a variety of mechanisms, including use of low-density zoning, habitat restoration, habitat management, designation of conservation easements, and land acquisition. Similarly, conservation will require a variety of partners in the area, working together for strategic implementation.

4.3.1 U.S. Forest Service—Acquisition and Management Agreements

The U.S. Forest Service has the largest conservation investment in the planning area. The integrity and habitat value of Cleveland National Forest lands would benefit from conservation of landscape linkages that extend to BLM lands on the border and into Mexico. The La Posta Linkage planning area is included within a designated Area of High Ecological Significance in the San Diego ranges of the National Forest (Stephenson and Calcarone 1999). The Forest Service recognizes the value of linkages in this area: *As development intensifies in the foothills, far-sighted planning is needed to ensure that habitat connectivity is maintained between the mountains and the remaining natural areas in the coastal and inland valleys* (Stephenson and Calcarone 1999).

The Forest Service could contribute to conservation in La Posta Linkage Complex A through acquisition or designation of conservation easements and/or management agreements with property owners of private inholdings in the National Forest. These privately owned lands are also the locations of the three I-8 undercrossings, and thus represent chokepoints in the linkage. The majority of these lands are currently being used for grazing, which can be compatible with wildlife use. Continued managed grazing in these areas would help to maintain habitat integrity. As an alternative to acquisition in these areas, conservation easements and/or management agreements could be developed to maintain the habitats in all or a portion of (1) up to approximately 1,240 acres in Cottonwood Valley, along Buckman Springs Road, east and west of I-8, and (2) up to approximately 1,740 acres in Cameron Valley, along La Posta Creek, north and south of I-8.

4.3.2 U.S. Navy and Bureau of Land Management—Land Use Withdrawal and Acquisition

The U.S. Navy and BLM are discussing withdrawal of BLM land uses from BLM lands adjoining the La Posta Microwave Tower property (Linkage Complex A). Our understanding is that the proposed land use by the Navy (i.e., SEAL training) would be compatible with use by wildlife. There would be no surface disturbance or live shooting or bombing. Conservation of private inholdings adjacent to Navy and BLM lands would best be accomplished through acquisition of approximately 2,500 acres.

4.3.3 Bureau of Land Management—Acquisition and Grazing Allotments

BLM could contribute to conservation through acquisition of private inholdings and other adjacent parcels along Campo Creek (approximately 1,360 acres in Linkage Complex B). Hauser Mountain is designated as a wildlife habitat management area (HMA). If a portion of the private lands east of Hauser Mountain also were acquired (Star Ranch valley), the land could be leased for grazing allotments (current use).

BLM should also consider targeted acquisition of properties in Smith and La Gloria canyons (Linkage Complex A). BLM land in the planning area is subject to the South Coast Resource Management Plan (BLM 1994) and subsequent revisions to that plan. Some of these lands include grazing allotments, which appear to be compatible with conservation objectives. Our conservation goals for this area (Section 3.2) are consistent with BLM Resource Condition Objectives (BLM 1994):

1. *Emphasize protection and enhancement of sensitive species habitat and open space values.*
2. *Improve management effectiveness within the management area through disposal of isolated parcels and consolidation of BLM public land ownership.*
3. *Enhance habitats for all wildlife species, including deer and quail.*
4. *Provide opportunities for low-impact recreation through provision of facilities and services.*

The BLM lands along the border are part of the Border Mountains area, which is administered as a Special Recreation Management Area (SRMA), where hiking, backpacking, equestrian use, camping, picnicking, nature study, hunting and motorized vehicle use, including off-highway vehicles on existing routes, are allowed. A stated goal in this area is for BLM to acquire privately owned inholdings and *consolidate public land ownership to establish an open space and wildlife corridor*, using *natural corridors (such as canyons) to connect these BLM public land parcels* (BLM 1994).

4.3.4 County of San Diego—Zoning and Conservation Planning

The private lands along both sides of SR-94 comprise one of the chokepoints in Linkage Complex A. The GP-2020 Working Copy map for the Lake Morena/Campo Community Planning Area proposes this area for densities of 1 unit per 40 acres. This density, and lower densities, could allow some use of remaining habitat by wildlife. Higher densities along this portion of SR-94, such as allowed in the existing General Plan, would severely restrict crossing the road in this area. Much of the area south of SR-94 is within the Campo Creek floodplain and would not be suitable for residential development. Some of this area is currently being used for grazing, which can be compatible with use of the area as a linkage. The County discourages development in Waters of the U.S. and delineated wetland habitats, which would require state and federal permits.

The General Plan 2020 Working Copy map for the Lake Morena/Campo Community Planning Area also proposes the Clover Flat/Miller Creek area of Linkage Complex A and the Star Ranch valley in Linkage Complex B, east of Hauser Mountain and west of Cameron Corners, for densities of 1 unit per 40 acres. Higher densities in these areas, such as allowed in the existing General Plan, would restrict use of these areas for wildlife movement. Portions of these areas would not be suitable for residential development because of floodplain restrictions and the presence of wetland habitats.

Within the next year, the County of San Diego plans to initiate development of a NCCP program for the eastern parts of the county as part of its Multiple Habitat Conservation and Open Space Program, which includes the La Posta Linkage planning area. This program will prioritize areas for conservation and provide incentives for mitigating the impacts of new development in these priority conservation areas. Ensuring the maintenance and management of landscape linkages between existing conserved open space is one of the goals of NCCP programs.

4.3.5 Private Land Trusts and Community Groups—Outreach and Acquisition

Although there are a few private land trusts and community groups interested in conservation of eastern San Diego County, conservation efforts should make the best use of limited funds and evaluate where there are alternatives to outright purchase. Nonetheless, in light of the rapid growth of the La Posta Linkage planning area, strategic use of acquisition funds in vulnerable areas of Linkage Complexes A and B is warranted, particularly at chokepoints along SR-94.

Community groups can help educate residents about the unique natural values of the area and ways to protect and restore them, including use and management of private properties, whether they are residential lots or grazing lands. Community groups should also work with the County Department of Planning and Land Use to ensure that new development, and associated impacts, in the community do not compromise the ability to conserve critical linkages and other important natural resources. The Mountain Empire Resources Information Taskforce (MERIT) is a group of long-term property owners and residents who want to maintain the rural character of the Campo/Lake Morena area, to promote a sense of community, and to maintain and protect natural resources in the area.

4.3.6 Caltrans—Road and Right-of-Way Improvements

There are at least three ways that Caltrans can contribute to conservation efforts in the La Posta Linkage planning area:

1. Remove riprap from creek banks within the linkage areas to allow greater wildlife use.
2. Maintain the right-of-way along Campo Creek under SR-94, south of Hauser Mountain, to ensure the underpass doesn't become too densely vegetated.

3. As part of any planned upgrades to SR-94, construct a wildlife underpass or bridge on SR-94 within Linkage Complex A to facilitate wildlife crossing and reduce mortality caused by wildlife crossing the road at-grade. This will become particularly important as development and traffic increase along SR-94.

4.4 NEXT STEPS

4.4.1 Dissemination of Information

By distributing this report to all stakeholders in the region, including federal, state, and local agencies, land trusts, community groups, and interested citizens, we hope to validate the findings of the USFS, BLM, and others who have previously recognized the conservation significance of this area. We hope that this report will encourage the coordinated conservation actions of all stakeholders.

4.4.2 Future Studies

The La Posta Linkage planning area comprises an ecological transition area between coastal habitats to the west, the Peninsular Range/Sierra de Juarez to the north and southeast, and the Sonoran Desert to the east. Thus, this area functions as both a north-south linkage and an east-west linkage. In this study, we identified north-south landscape linkages between protected lands along the border and protected lands in the Cleveland National Forest.

Moreover, the La Posta Linkage planning area has greater intrinsic conservation value than its function solely as a wildlife linkage. This area forms the intersection of high elevation habitats in the Laguna Mountains, lower elevation habitats of the Campo Valley, and upper Sonoran Desert communities. The diversity of this area is largely a result of its high topographic, geologic, and climatic diversity. Therefore, conservation efforts in this area should ensure that this diversity is adequately represented in protected open space.

To address this need for strategically-placed conservation along the international border, CBI is continuing work with Pronatura and The Nature Conservancy to develop a binational conservation strategy for the border region (including the La Posta Linkage planning area). This project, scheduled for completion by August 2004, will (1) propose a binational conservation network that represents the regional diversity of vegetation communities, along elevational gradients, from the coast to the desert, and (2) promote workable land protection strategies. The objectives of the binational conservation network are to:

1. Link areas that are already protected.
2. Identify unprotected areas that could serve as core conservation targets.

3. Lay the foundation for a binational park system that connects the Parque Constitución de 1857 in Mexico to National Forest lands in the U.S.
4. Conserve a biogeographic representation of the border region.

Pronatura's work south of the border in the La Posta Linkage planning area would become an extension of Las Californias Binational Initiative begun in northwestern Baja California. Conservation priorities identified to date include the perennial springs and vernal pools around Neji and the watershed lands of Cañada del Testarazo, as well as habitats in the central portion of El Hongo valley that would maintain a landscape linkage across the border. Regardless of where core resource areas in Mexico are targeted for protection, there should be conservation of landscape linkages between those areas and the BLM lands on the border in Linkage Complexes A and B.

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APPENDIX A
WORKSHOP ATTENDEES

San Diego Zoo
San Diego, California
28 June 2002

Alison Alberts, CRES
Steve Anderson, U.S. Forest Service
Bruce April, Caltrans
Andrea Atkinson, U.S. Geological Survey
Paul Beier, Northern Arizona University
Joey Betzler, CRES
Bernice Bigelow, U.S. Forest Service
Dave Bittner, Wildlife Research Institute
Peter Bloom, Consultant
Randy Botta, Ca. Department of Fish and Game
Walter Boyce, University of California, Davis
Tracey Brown, CRES
Clint Cabanero, South Coast Wildlands Project
Tim Cass, San Diego County Water Authority
Mike Casterline, Univ. California, Santa Barbara
Liz Chattin, South Coast Wildlands Project
Jose Delgadillo Rodriguez, Universidad Autonoma de Baja California
Jesse D'Elia, U.S. Fish and Wildlife Service
Jim Dice, California State Parks
John DiGregoria, U.S. Fish and Wildlife Service
Mark Dodero, RECON
Kevin Doyle, National Wildlife Federation
Claude Edwards, Klein/Edwards
Brian Edwards, South Coast Wildlands Project
Summer Elliott, Manzanita Mission Indians
Mike Evans, Pacific Southwest Biological
David Faulkner, Forensic Entomology Services
Corey Ferguson, U.S. Forest Service
Ernesto Franco, CICESE
Paul Fromer, RECON
Allen Greenwood, Trout Unlimited
Gjon Hazard, U.S. Fish and Wildlife Service
Alan Harper, Terra Peninsular
Greg Hill, Bureau of Land Management
Rachelle Huddleston-Lorton, BLM
Debby Hyde-Sato, U.S. Forest Service
Allisa Ing, California State Parks
Richard Kiy, International Community Foundation
Michael Klein, Klein/Edwards
David Lawhead, Ca. Department Fish and Game
Habib Lecuanda, Pronatura
Carolyn Lieberman, U.S. Fish and Wildlife
Jeff Lincer, Wildlife Research Institute
Ken Logan, Consultant
Rob Lovich, Camp Pendleton
John Lovio, Technology Associates International
Claudia Luke, San Diego State University
Lisa Lyren, U.S. Geological Survey
Sandy Marquez, U.S. Fish and Wildlife Service
David Mayer, Ca. Department of Fish and Game
Richard Minnich, Univ. California, Riverside
Virginia Moran, Consultant
Scott Morrison, The Nature Conservancy
Tom Oberbauer, County of San Diego
Stacey Osterman, University of California, Davis
Kristeen Penrod, South Coast Wildlands Project
Esther Rubin, CRES
Mario Salzmann, Fundación La Puerta
Joyce Schlacter, Bureau of Land Management
Tom Scott, University of California, Riverside
David Shaari, California State Parks
Jerre Stallcup, Conservation Biology Institute
Scott Tremor, San Diego Natural History Mus.
Phil Unitt, San Diego Natural History Museum
Miguel Angel Vargas, Pronatura
Guy Wagner, U.S. Fish and Wildlife Service
Andrea Warniment, South Coast Wildlands
Mark Webb, San Diego County Parks
Mike Wells, California State Parks
Michael White, Conservation Biology Institute
Kathy Williams, San Diego State University
Kirsten Winter, U.S. Forest Service
David Younkman, National Wildlife Federation

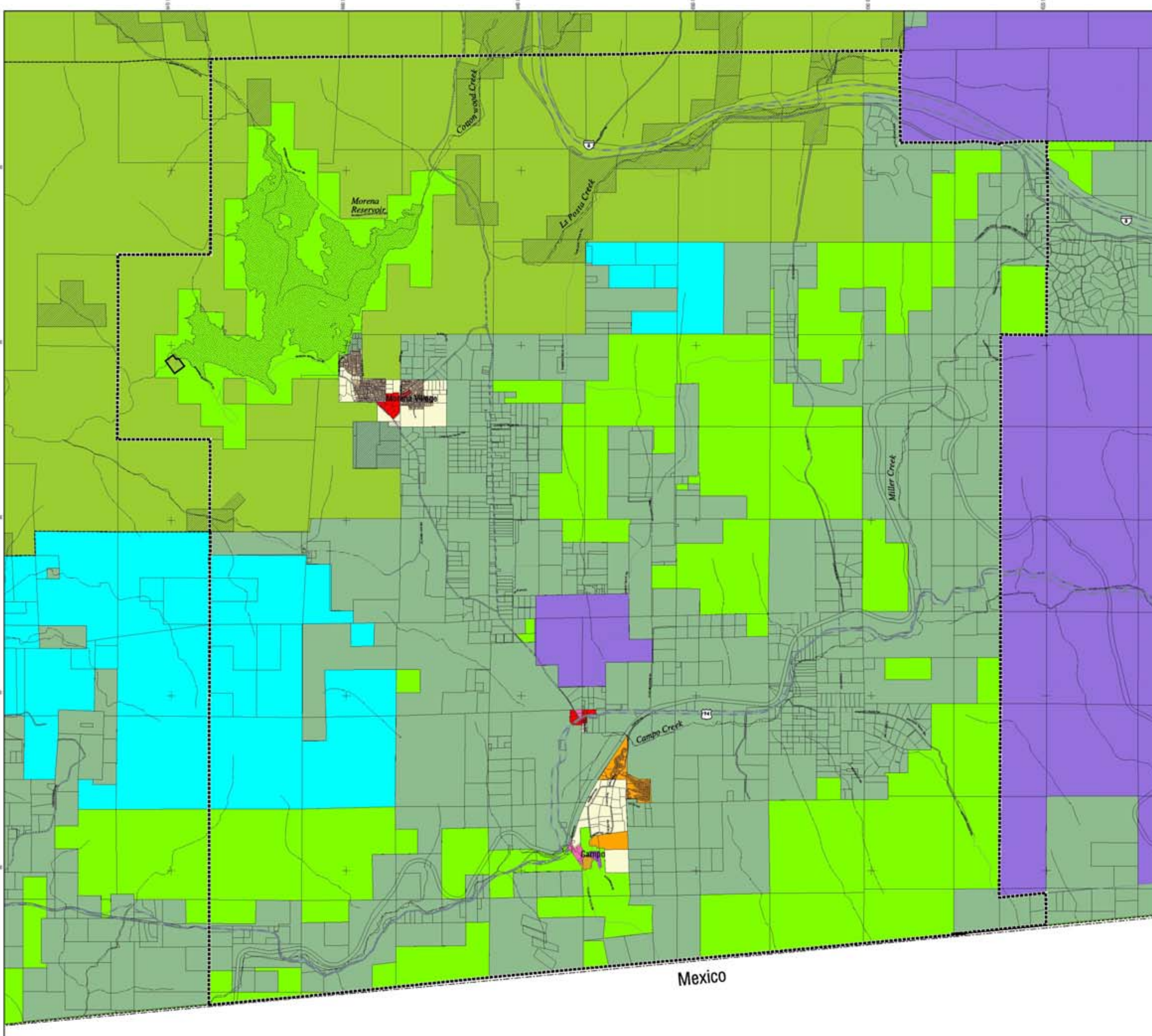
Universidad Autonoma de Baja California
Ensenada, Baja California
21 September 2002

Laura Arriaga, CONABIO
Jose Maria Beltran, Pronatura
Joey Betzler, Center for Reproduction of Endangered Species
Ernesto Campos, Universidad Autonoma de Baja California
Gorgonio Ruiz Campos, Universidad Autonoma de Baja California
Diego Armando Casas, Pronatura
Alfredo Castillo, CICESE
José Delgadillo, Universidad Autonoma de Baja California
Eusebio Barreto Estrada, Universidad Autonoma de Baja California
Michael U. Evans, ProPeninsula
Jorge Alaníz García, Universidad Autonoma de Baja California
Roberto del Castillo Heredia, Universidad Autonoma de Baja California
Habib Lecuanda, Pronatura
Marcelo Rodríguez Meraz, Universidad Autonoma de Baja California
Scott Morrison, The Nature Conservancy
Tom Oberbauer, County of San Diego
Kristeen Penrod, South Coast Wildlands Project
Jon Rebman, San Diego Natural History Museum
Jerre Ann Stallcup, Conservation Biology Institute
Michael White, Conservation Biology Institute

APPENDIX B

LAKE MORENA/CAMPO COMMUNITY PLANNING AREA

- Existing General Plan (County of San Diego 1979)
- Working Copy (County of San Diego in prep., December 2002)



COUNTY OF SAN DIEGO

GENERAL PLAN 2020

LAKE MORENA/CAMPO
Sponsor Group Area

EXISTING GENERAL PLAN

Source: County of San Diego

- Residential 1 du/1,2,4 acres
- Residential 1 du/acre
- Residential 2 du/acre
- Residential 2.9 du/acre
- Residential 4.3 du/acre
- Residential 7.3 du/acre
- Residential 10.9 du/acre
- Residential 14.5 du/acre
- Residential 24 du/acre
- Residential 43 du/acre
- Office Professional
- Neighborhood Commercial
- General Commercial
- Service Commercial
- Visitor Serving Commercial
- Limited Impact Industrial
- General Impact Industrial
- Estate Residential 1 du/2,4 acres
- Multiple Rural Use 1 du/4,8,20 acres
- Intensive Agriculture 1 du/2,4,8 acres
- General Agriculture 1 du/10,40 acres
- Specific Plan Area (SPA) (values are the General Plan approved densities expressed as dwelling units per acre) VACANT SPA = Expired or Withdrawn SPA ACTIVE SPA = Developed, Vested, or Pending SPA
- Public/Semi-Public Lands
- National Forest and State Parks
- Impact Sensitive 1 du/4,8,20 acres
- Telecommunications
- Indian Reservation
- Forest Conservation Initiative Overlay
- County Water Authority Boundary
- Lake Morena/Campo Sponsor Group Area Boundary
- Adjacent Community Plan/Sponsor Group Boundary
- Jurisdictional Boundary

Regional Location Map

Prime Consultant: WRT Wallace Roberts & Todd, Inc. Planning and Design

SanGIS

Map Notes: Map Coordinates: Stateplane NAD83 Feet, Zone 3401

These are draft maps only and should be destroyed upon submittal of subsequent versions of the maps.

FEET

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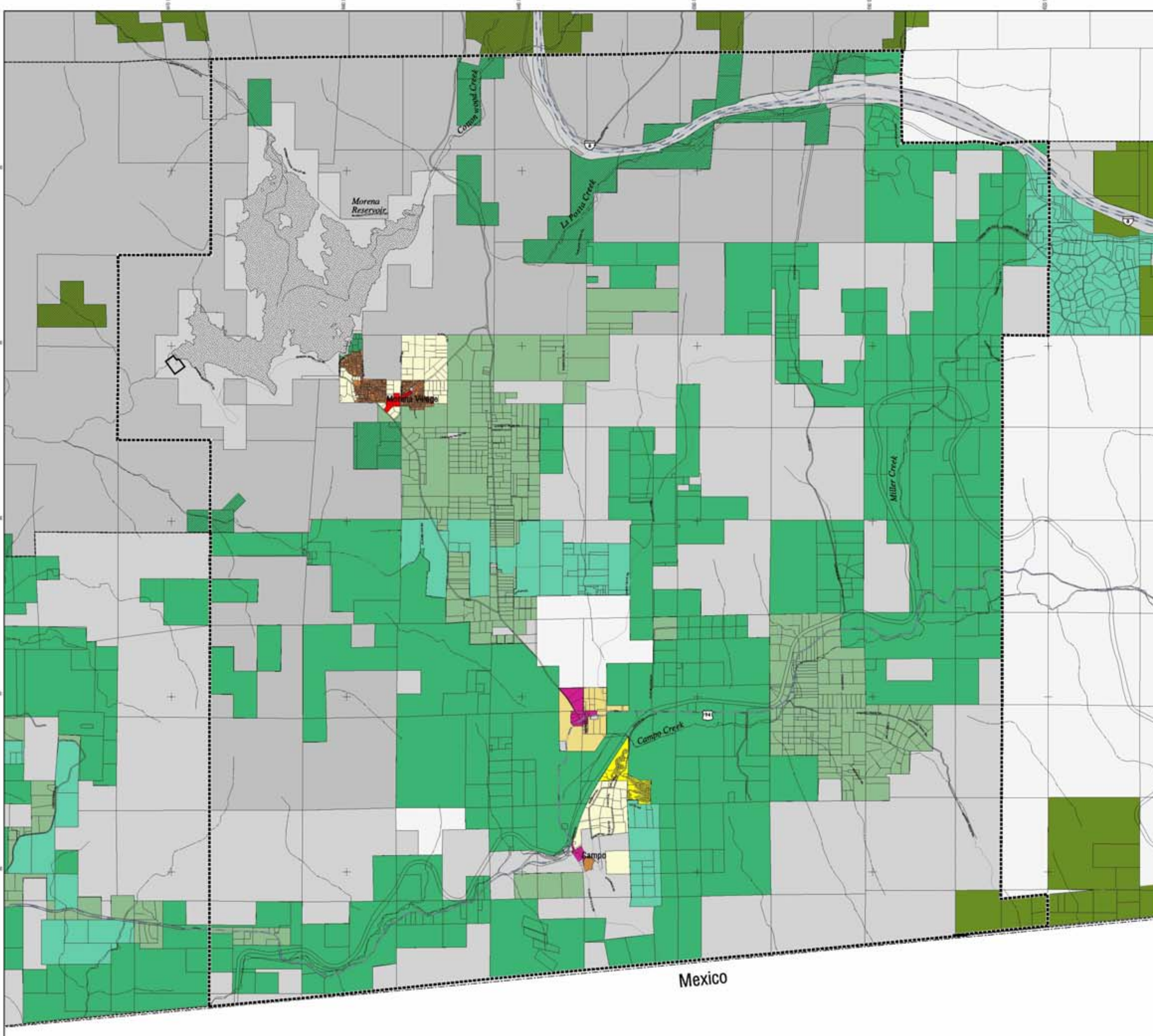
1 inch = 1800 feet

Date: 03/25/03



COUNTY OF SAN DIEGO

GENERAL PLAN 2020

LAKE MORENA/CAMPO
Community Planning Area

Working Copy - December 2002

- Village Residential (VR-24), 24 du/ac
- Village Residential (VR-14.5), 14.5 du/ac
- Village Residential (VR-10.9), 10.9 du/ac
- Village Residential (VR-7.3), 7.3 du/ac
- Village Residential (VR-4.3), 4.3 du/ac
- Village Residential (VR-2.9), 2.9 du/ac
- Village Residential (VR-2), 2 du/ac
- Semi-rural Residential (SR-1), 1 du/ac
- Semi-rural Residential (SR-2), 1 du/2 ac
- Semi-rural Residential (SR-4), 1 du/4 ac
- Semi-rural Residential (SR-10), 1 du/10 ac
- Rural Lands (RL-20), 1 du/20 ac
- Rural Lands (RL-40), 1 du/40 ac
- Rural Lands (RL-80), 1 du/80 ac
- Rural Lands (RL-160), 1 du/160 ac
- Specific Plan Area (densities indicated in italics)
- Office Professional
- Neighborhood Commercial
- General Commercial
- Service Commercial
- Rural Commercial
- Limited Impact Industrial
- Medium Impact Industrial
- High Impact Industrial
- Public/Semi-Public and Preserve Lands
- National Forest and State Parks
- Tribal Lands
- Forest Conservation Initiative Overlay
- County Water Authority Boundary

- Lake Morena/Campo Sponsor Group Area Boundary
- Adjacent Community Plan/Sponsor Group Boundary
- Jurisdictional Boundary

Regional Location Map

Prime Consultant: Wallace Roberts & Todd, Inc.

Map Not to Scale   Map Coordinates: Stateplane NAD83 Feet, Zone 3401

Date: 01/17/03